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Tyler Bryant Burton

Western Kentucky University, tyler.burton230@topper.wku.edu

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HOW ARE PROFESSORS PREPARING SCHOOL PSYCHOLOGY STUDENTS TO
EVALUATE RESEARCH?

A Specialist Project
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

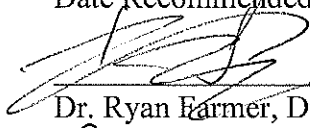
In Partial Fulfillment
Of the Requirements for the Degree
Specialist in Education

By
Tyler Bryant Burton

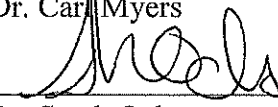
August 2019

HOW ARE PROFESSORS PREPARING SCHOOL PSYCHOLOGY STUDENTS TO
EVALUATE RESEARCH?

Date Recommended May 9, 2019


Dr. Ryan Farmer, Director of Specialist Project

Carl Myers
Dr. Carl Myers


Dr. Sarah Ochs

Cheryl Q Davis 5/10/19
Dean, The Graduate School Date

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HOW ARE PROFESSORS PREPARING SCHOOL PSYCHOLOGY STUDENTS TO EVALUATE RESEARCH?

Tyler Burton

August 2019

42 Pages

Directed by: Ryan Farmer, Ph.D., Carl Myers, Ph.D., and Sarah Ochs, Ph.D.

Department of Psychology

Western Kentucky University

This study examines how school psychology professors are preparing graduate students to evaluate research and seeks their views on problematic assessment and intervention practices. School psychology faculty members' e-mails were identified based on the National Association of School Psychologists' (NASP) list of Approved Programs (NASP, 2017) and a total of 127 professors responded. Each participant completed a survey that included 22 Likert scale items and three free listing items. Three research questions were proposed: What percentage of school psychology faculty members are using each of the strategies recommended by Lilienfeld et al. (2012)? What school-based assessment practices do school psychology faculty members identify as the most problematic? What school-based intervention practices do school psychology faculty members identify as the most problematic? The researcher found that the majority of programs are using the recommendations suggested by Lilienfeld and colleagues (2012), although there is room for improvement in the amount of usage for multiple recommendations. School psychology faculty members frequently listed cognitive profile analysis (CPA), projective testing, and inappropriate use of assessments as problematic assessment practices, and inappropriate use of interventions and eclectic counseling as problematic intervention practices. Implications for the use of evidence-based practices (EBP) were provided. Limitations of the study were discussed.

Introduction

The field of school psychology has been advocating for the identification of evidence-based practice (EBP) as the best—and standard—practice with national organizations leading the way (e.g., American Psychological Association [APA], 2005). The APA Task Force on Evidence-Based Practice (2006) defines EBP in psychology as “the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences” (p. 273). APA Division 16 and the Society for the Study of School Psychology formed a joint task force with the goal of promoting EBP¹ in school psychology, as well as to codify and disseminate those practices (Kratochwill & Stoiber, 2002). Despite these efforts (APA, 2005; APA, 2006; Kratochwill & Stoiber, 2002) and those of others (e.g., Bradley-Johnson & Dean, 2000), a small percentage of school psychologists report using EBPs (Lilienfeld, Ammirati, & David, 2012).

Evidence-Based Practice in Practice?

Nearly 20 years ago, Bradley-Johnson and Dean (2000) noted that one of the more consistent calls for change in the field of school psychology was the need for a scientific approach to school problems. Reschly and Ysseldyke (1995) and Reschly (2000) referred to this data-focused, problem-solving approach as a paradigm shift in school psychology. A school psychologist takes on the challenge of understanding

¹ Evidence-based practice is a broad term encompassing both evidence-based assessment (EBA) and evidence-based intervention (EBI) practices. The majority of research and focus has been on EBI, though there is a growing body of literature on EBA (see Hunsley & Mash, 2007). For clarity, we will refer to EBP broadly throughout this document.

procedures for, and the importance of, systematic data collection and analysis, research design, and any issues pertaining to validity or reliability of measurement. Having these skills is beneficial for all types of school psychologists by being able to plan effective data-based programs, modify programs to fit specific situations, and to objectively evaluate program effects.

Current State of Practice and Training for EBP

Shernoff, Kratochwill, and Stoiber (2003) found that there were low rates of training in interventions that were considered evidence-based in school psychology graduate programs. Hicks, Shahidullah, Carlson, and Palejwala (2014) did a study to investigate Nationally Certified School Psychologists' (NCSP) training in and usage of EBPs on behavioral concerns for children, and any barriers that were reported in regards to implementation. Hicks and colleagues (2014) found that "lack of time" was the most common barrier for implementing behavioral EBPs, followed by "lack of necessary resources" and "financial constraints," respectively. They also reported that 71% of their 392 respondents reported a "perceived inadequacy of graduate program training in behavioral EBPs." Since then, there has been a push for graduate programs to include training in EBPs within their instruction. A recent study by Reddy, Forman, Stoiber, and Gonzalez (2017) examined the attitudes and beliefs of training of EBPs (i.e. assessments and interventions) in school psychology graduate programs across the United States and Canada. They surveyed 460 school psychology trainers on their attitudes and beliefs about education and training, and measured this by using a 24-item, five-point Likert scale. Unlike Shernoff et al. (2003) and Hicks et al. (2014), Reddy and colleagues (2017) reported much more positive ratings of trainers' views of EBP, and program and

organizational support for such training. Their findings indicated that 75% of trainers reported that their programs required at least one EBP course and 98% reported evidence-based assessment (EBA) courses.

Dunsmuir, Frederickson, and Lang (2017) reported a national study in the United Kingdom of 13 school psychology programs who utilized problem-based learning (PBL). Their study addressed strengths and weaknesses of PBL, the adaptations made by programs who used PBL, and if there were any patterns in the strengths and weaknesses across different levels on use of PBL. PBL has been used across health sciences since the 1970's and was thought to be potentially better than conventional programs at producing professionals who were better able to keep up with developments in knowledge, apply the knowledge to practice, and contribute effectively in different contexts. Previous studies have demonstrated that PBL use "yields an advantage over conventional programs with respect to critical thinking, problem solving, and communication/ teamwork" (p. 395). Although, conventional instruction is associated with better short-term knowledge, PBL shows better outcomes concerning long-term retention. This study found seven strengths of PBL: a) PBL is compatible with the existing program philosophy; b) self-directed learning; c) helps deal with uncertainty; d) builds confidence; e) increased knowledge and competence; f) beneficial collaboration; g) integration of theory and practice. There were four weaknesses found: a) Assessment; b) content control; c) group factors; and d) time. The review and development of PBL indicated that there needed to be updating and revising of PBL content, program-specific developments, and tutor training. This study presents an interesting way to possibly train school psychology graduate students. PBL is more focused on allowing students to engage in self-directed learning, which can show

increases in dealing with uncertainty, and facilitates development of critical-thinking skills. A weakness for PBL is problems with summative assessment since products are derived through group activities where it is hard to appraise contributions from individuals. The authors noted that PBL has not been used often in psychology programs and more research is needed to determine whether it could be effective internationally, but there are certainly aspects of PBL that would benefit school psychologists with their everyday practice.

Scientist-Practitioner Gap

There have been concerns about the wide gap between science and practice in psychology (Belar, 2000), and education and school psychology are no exception (Kozloff, 2005; Lilienfeld et al., 2012). The *scientist-practitioner gap* (SPG; Cautin, 2011; Kazdin, Kratochwill, & VandenBos, 1986) is defined as a difference in what research indicates to be the best routine clinical practice and what practitioners are actually doing with clients. There is still little that is known about the parameters of the SPG; for instance, the rate of field-based EBP and non-EBP (e.g., non-researched or pseudoscientific practices) use is unclear. One significant challenge is that both EBP and non-EBP are readily available to practitioners. While libraries, such as Cochrane Reviews, and websites, such as Intervention Central and What Works Clearinghouse, provide excellent resources for practitioners, it is unclear how familiar practitioners are with these resources, or what other sources they are using to obtain practice recommendations.

Kratochwill and Stoiber (2002) have three concerns regarding the accessibility of EBP to practicing school psychologists. One concern is that practitioners tend to rely

more on clinical judgement rather than the research on treatment effectiveness in designing and evaluating their own interventions; for instance, Bramlett, Murphy, Johnson, Wallingsford, and Hall (2002) found that only about 47% of practitioners used journal articles to develop interventions while the vast majority, 83%, relied on personal judgment. Another concern is that many practitioners use the “one size fits all” approach and believe that doing something incorrectly is better than doing nothing (Kratochwill & Stoiber, 2002). The last concern is that the integration of an empirical basis into practice does not match the demands that practitioners face on a daily basis. What Kratochwill and Stoiber (2002) mean by their last concern is that even when psychologists are aware of the empirical evidence, oftentimes there is a failure to incorporate the evidence into practice. This failure to infuse evidence into practice could be due to the lack of resources or other contextual variables, such as lack of training in identifying EBP, inadequate resources, negative perspectives of administrators or teachers, or issues related to theoretical orientation or beliefs about practice (Forman, Olin, Hoagwood, Crowe, & Saka, 2009). The medical field experienced similar challenges in the mid-20th century (Feinstein, 1967; Jakovljevic & Ostojić, 2016).

While a high percentage of school psychology programs report including coursework on EBP (Reddy et al., 2017), practitioners frequently report training-related barriers to EBP implementation (Forman et al., 2009; Hicks et al., 2014), such as inadequate preparation to implement interventions; furthermore, their use of non-EBP sources (Bramlett et al., 2002) suggests difficulties in recognizing EBP and non-EBP. Despite a strong focus on EBP during graduate training, it is unclear from these studies how faculty are preparing students to identify EBP. Lilienfeld and colleagues (2012)

offered a number of strategies to help practitioners in recognizing EBP and non-EBP, as well as recommendations for graduate training programs, to help inoculate school psychologists against untested procedures, fads, and other well-branded pseudoscience.

The Scientist-Practitioner Gap in Medicine

Science and pseudoscience in medicine have been discussed since before the 1900's (e.g., Sternberg, 1897). Over a century ago, Sternberg (1897) addressed concerns related to false advertisement of pseudo-scientific medical products. Jakovljevic and Ostojić (2016) stated that in the 1990's, the concept of evidence-based medicine (EBM) came into existence and is considered the standard care of health. This concept helps promote a systematic approach for clinicians in their practice by guiding them to the best available scientific evidence (Jakovljevic & Ostojić, 2016). However, there are problems in the medical field such as misinterpreted findings, false and unhelpful findings, pseudoscience, and evidence-biased medicine that are a threat to the concept of EBM (Jakovljevic & Ostojić, 2016). Jakovljevic and Ostojić (2016) posit that political and economic reasons contribute to the appearance of pseudoscience in the medical field. It is important that while doing research there are ethical and procedural steps taken that eliminate bias, such as reporting all conflicts of interest and the use of double-blind randomized controlled trials (Jakovljevic & Ostojić, 2016). Richard Feynman, a 20th century physicist, noticed that researchers were more likely to confirm past results of research than refute them, and results that did not conform to expectation were usually revised or discarded (MacCoun & Perlmutter, 2015). Feynman helped to develop different types of blind analyses to climate these biases, and these techniques are still common practice today (MacCoun & Perlmutter, 2015). The problem with these types of

analyses is that often they are looked at as time consuming and involving extra effort. However, with the help of technology this process can be made much simpler by using off-the-shelf algorithms to maintain blinding (MacCoun & Perlmutter, 2015).

Bates et al. (2003) state that there are many studies within the medical field that have identified gaps between optimal and actual practice. Even though there is accepted evidence for EBM guidelines, practitioners take an average of five years to implement them, if they implement them at all. Some problems that could interfere with practitioners implementing EBM's are the speed at which it takes to implement and how it fits into the everyday workflow. Bates et al. (2003) propose a method to helping practitioners use EBM's by incorporating a decision support system through technology that helps guide practitioners into using appropriate strategies.

Across the scientist-practitioner gap in medicine, practitioners and researchers are engaged in routine dialogue, researchers are encouraged to engage with practitioners (Kahn et al., 2011), policy changes are being implemented, and annual publications document evidence-based approaches to treatment (Institute of Medicine, 2007).

Gaps in EBP

Despite medicine's example, there are a number of gaps in the EBP of psychology. In particular, Lilienfeld and colleagues (2012) describe a number of "myths" (p. 10) in the field of school psychology that have not been supported by research or science. For instance, myths such as left-brain/right-brain and learning styles have somehow become popular despite poor to non-existent support (Lilienfeld et al., 2012). Similarly, a number of interventions (e.g., learning styles; Pashler, McDaniel, Rohrer, & Bjork, 2009) and assessment (e.g., projective testing; Benson, Floyd, Kranzler, Eckert, &

Fefer, 2018; Hojnoski, Morrison, Brown, & Matthews, 2006) practices continue to persist despite a lack of evidential support. It is important for school psychology practitioners to be aware of the interventions that are not evidence-based and implement the interventions that have been properly researched. Not using EBP could possibly cause harm, either directly or indirectly. For example, a school psychologist who relies largely on subtest scatter of an intelligence test to disqualify an individual from intellectual disability will potentially deny access to needed services (Bergeron & Floyd, 2013; McGill, Dombrowski, & Canivez, 2018; Williams & Miciak, 2018). There could also be the problem of school psychologists who assist in the use of an invalidated intervention program that may waste time, energy, and money (Harvey & Gumport, 2015).

Kratochwill and Shernoff (2003) have five assumptions for promoting EBP into our profession: (a) the need for shared responsibility, (b) the need for EBP guidelines to support implementation, (c) the need for enhanced practice guidelines to ensure efficacy, (d) the need for professional development, and (e) the need for a scientist-practitioner training model. First, shared responsibility could mean being actively involved on EBP task forces, participating in practice-research networks, and evaluating EBPs in school practice contexts. Second, Kratochwill and Shernoff (2003) recommend that practitioners use manuals and procedural guidelines to help in the facilitation of interventions in practice. Practice guidelines can also help in the operationalization of EBPs. Third, simply having a list of interventions that are labeled as evidence-based is not practical for the real-world setting. Therefore, having more enhanced practice guidelines may better promote the effective use of interventions. Fourth, professional development needs to be emphasized to graduate programs as well as practitioners to ensure the effective use of

EBPs. Lastly, the promotion of this model will strengthen the connection between research and practice, and is important for graduate training and professional work.

VanDerHeyden (2018) reminds us of Shapiro's (2000) recommendation that school psychologists should be "solving big, not little, problems and operating strategically and systematically at the system level to prevent failure and promote resilience." (pp. 50-51). This recommendation applies at the practitioner and at the training levels. Clearly, the use of non-EBP is a big problem, and while teaching evidence-based strategies solves a little problem, it likely is not solving the big problem.

VanDerHeyden (2018) points out that one potential reason for why school psychologists engage in non-evidence based practices is that they were trained to conduct specific practices rather than being trained to identify and implement EBP. Lilienfeld et al. (2012) suggest that being more critical consumers of research would benefit school psychologists, and may even facilitate a narrowing of the scientist-practitioner gap. Toward this end, they developed 10 recommendations for training programs that would promote critical consumption of research (see Table 1).

Rather than emphasizing specific practices, Lilienfeld and colleagues (2012) stress the importance of a much more general skill: teaching students to critically evaluate data. Toward that end, their recommendations focus on attitudes of science, such as empiricism (i.e., recommendations #1 and #9), philosophic doubt (i.e., recommendation #2, #3, #4, #8, and #10), to question one's instruction using the extant literature (i.e., recommendation #6), and, other, basic strategies of the scientific process. These recommendations may well be part of a strategic and systematic solution to one big problem - the scientist-practitioner gap in school psychology.

Table 1

Recommendations for Being Critical Consumers of Research

1. School psychologists should always seek out disconfirming evidence.
2. Do not become overly attached to your hypotheses.
3. Consider rival hypotheses.
4. School psychologists should not cherry-pick.
5. Put one's intuitions to systematic tests.
6. Be skeptical of clinical wisdom and do not mistake "eminence based practice" for "evidence-based practice."
7. Be cognizant of one's blind spots.
8. Dissent should be encouraged.
9. School psychologists should quantify data as much as possible.
10. Maintain a self-critical attitude.

Note. Adapted from Lilienfeld et al. (2012).

Purpose Statement

Given the importance of EBP, the push for the implementation of EBP (e.g., American Psychological Association [APA], 2005), the need for researchers and graduate programs to actively work toward narrowing the scientist-practitioner gap (Bradley-Johnson & Dean, 2000; Kratochwill & Stoiber, 2002), and for school psychologists to "solve big problems" (Shapiro, 2000; VanDerHeyden, 2018), Lilienfeld and colleague's (2012) recommendations are crucial strategies for graduate educators. The current study seeks to better understand how graduate faculty are directly teaching graduate students to

be critical consumers of research by examining the percentage of trainers that are explicitly using the strategies described by Lilienfeld and colleagues (2012).

In addition, this study is an initial effort to better understand the parameters of the scientist-practitioner gap by surveying school psychology graduate faculty in the United States to determine if there are clear types of non-EBP that are pervasive in clinical practice. This information would help university faculty and professional organizations develop targeted professional development to minimize the influence of inferior approaches to practice.

This study is descriptive in nature, and thus does not pose hypotheses, but instead seeks to describe the perspectives of graduate educators and their training practices in relation to Lilienfeld and colleagues (2012) recommendations. Specifically, we asked three research questions.

- 1) What percentage of school psychology faculty members are using each of the strategies recommended by Lilienfeld et al. (2012)?
- 2) What school-based assessment practices do school psychology faculty members identify as the most problematic?
- 3) What school-based intervention practices do school psychology faculty members identify as the most problematic?

Method

Measures

This study examined archival data. School psychology graduate training programs were identified based on the National Association of School Psychologists' (NASP) list of Approved Programs (NASP, 2017). Each individual program was reviewed by the primary investigator and a team of research assistants to identify publicly available university e-mail addresses of faculty. In total, 912 school psychology faculty e-mails were identified. Each of these school psychology faculty were sent an e-mail with information regarding the nature of the study, the benefits of their participation, risks to participation, and expected length of participation. Within the recruitment e-mail, a Qualtric survey link was provided. A second e-mail was sent one month later in order to increase the response rate of the survey. Of the 912 who were contacted, 127 responded (14%).

The participants completed demographic information to determine eligibility. Individuals not currently teaching in a school psychology graduate program were excluded from the study. The survey included 22 Likert scale items and three free listing items. Likert items were on a scale from 1 – 7 with 1 being “strongly disagree” and 7 being “strongly agree.” Free listing items requested that survey participants list out the most problematic practices, from their perspective, in school psychology that lack evidence across assessment and intervention. At the end of the survey, participants were provided with an opportunity to enroll in a drawing for an incentive; these identifying data were kept separate from the study data. The WKU internal review board reviewed all procedures and approved the recruitment method and incentives.

Participants

Participant demographic information is available in Table 2. The vast majority of faculty reported holding a doctoral degree, while only a fraction of participants held a specialist degree or masters. Less than half were licensed to practice as a psychologist by their state licensing board, while 61% held credentials as a school psychologist in their state. About half of the participants reported being a Nationally Certified School Psychologist (NCSP). The most common job title held was Full Professor (32.2%) with an equal number of both Assistant Professor (29.6%) and Associate Professor (29.6%) titles. Most respondents attended a graduate program that identified as Scientist-Practitioner model (Boulder Model).

Data Analysis

First, demographic data were presented in tabular form. Second, data answering the research questions were analyzed as follows. For question one, addressing which strategies faculty members use to prepare students to be critical consumers of research, descriptive statistics (median, range, frequency) were found. Proportions of responses for each strategy were found.

For questions two and three, categories (e.g., projective testing) were developed and each response was coded by the investigator and a second individual; in instances of disagreement, a third rater was used to select a category. This resulted in 97% agreement on the assessment responses and 95% agreement on the intervention responses across Categories were determined by looking at a sample of the responses and Dr. Farmer and myself agreeing upon appropriate category titles.

Table 2

Participant Data

Type of Data	Percent	<i>n</i>
Degree of faculty member		
Doctoral (Ed.D., Ph.D., or Psy.D.)	97.4	113
Educational specialist	1.7	2
Masters (M.A., M.Ed., or M.S.)	0.9	1
Area of focus of the highest degree held		
School Psychology	90.5	105
Clinical Psychology	4.3	5
Other (e.g., ABA, Educational Psychology)	5.2	6
Certifications and licensures		
Nationally Certified School Psychologist	49.1	57
Licensed/Certified School Psychologist	43.1	50
Board Certified Behavior Analyst	10.3	12
American Board of Professional Psychology	3.4	4
Nationally Certified Counselor	0.9	1
Other license type	3.4	4
Job title		
Full Professor	33	37
Associate Professor	30.4	34
Assistant Professor	30.4	34
Adjunct Professor/Lecturer	2.6	3
Visiting Professor	0.9	1
Other (e.g., Research Assistant Professor)	2.6	3
Philosophy/model of graduate program you completed		
Scientist-Practitioner (Boulder Model)	88.8	103
Scholar-Practitioner (Vail Model)	3.4	4
Scientist-Scholar-Practitioner	3.4	4
Other (e.g., Pragmatic, Clinical Scientist)	4.3	5

raters. In the event that a participant responded with an answer related to assessment (e.g., projective testing) when asked about interventions, or vice versa, those data were transferred to the appropriate column. In the event that a participant did not provide a response or responded that they did not know, those data were coded as “no response” and reported. Once data were coded, they were analyzed to determine the percentage of participants who reported each type of problematic behavior. Saliency scores (Smith, 1993) were computed for each category. Saliency scores account for the frequency of mention (i.e., how often they are mentioned overall), and are weighted based upon their placement in a free list (e.g., at the top of the list or at the bottom). Subsequently, saliency scores for each category were graphed as a scree plot (Quinlan, 2005; see example in Figure 1).

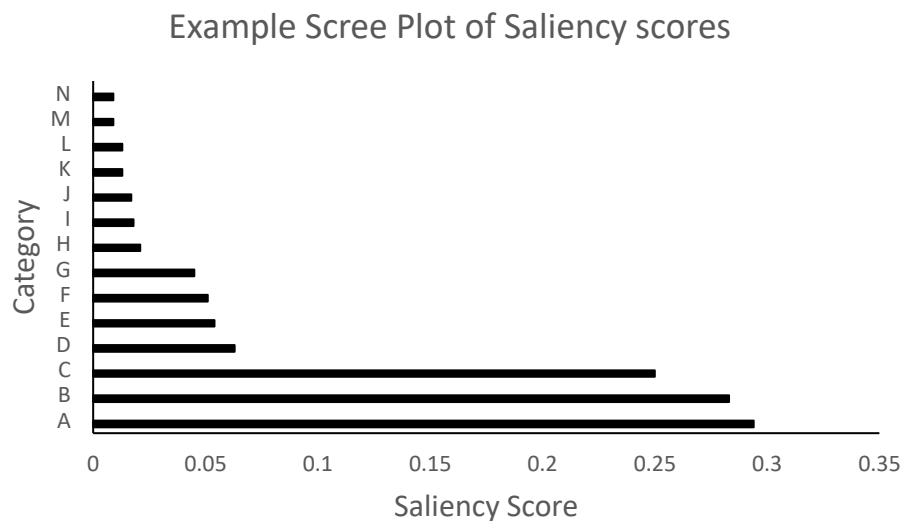


Figure 1. Example scree plot of saliency scores.

Categories were then interpreted as being more salient when their saliency score was closer to 0, and thus a scree plot permits group level interpretation by detecting, based upon visual analysis where items become less salient to the group (e.g., in Figure 1, between H and G). This analysis was completed for two of the three free listing questions, producing a scree plot of saliency scores for categories related to assessment (e.g., projective testing) and intervention (e.g., learning styles). Additionally, the percentage of participants reporting each category was presented for descriptive review.

Results

Program and Content Information

Table 3 presents the results for the information on various training aspects of school psychology programs. Three-fourths of the participants reported that their school psychology program offers a Specialist degree, while just over half responded that their program offers a Ph.D. Just under half indicated their program offers a Master's degree. Only a few participants indicated their program offering a Psy.D., Ed.D., or other (e.g. Advanced Certificate; Post Master's Certificate). The majority of participants indicated their program was accredited by NASP and over half indicated accreditation by APA. A very small percent indicated BACB and other types of accreditation as well.

The most common topic areas taught by the participants included Practicum, Academic and/or Cognitive Assessment, Individual Interventions, Classroom-based Interventions, Consultation, Psychological Assessment, and Academic Interventions. Topic areas that were also taught included Research Methods and/or Statistics, Ethics and/or Law, Psychological Foundations, Diversity, and Educational Foundations. Other topic areas taught that were listed by the participants involved Internship, Developmental Psychology, Program Evaluation, among others.

Three-fourths of the participants noted that they supervise students in a School setting during clinical or practicum activities. A university-based clinic was the second highest setting, while other settings included community-based clinic, hospital, private practice, and other (e.g. preschool; summer camp).

Table 3

Training Data on the School Psychology Programs

Type of Data	Percent	<i>n</i>
Degrees your school psychology program offers		
Specialist	75.9	88
Ph.D	55.2	64
Master's	45.7	53
Psy.D.	6.9	8
Ed.D.	0.9	1
Other (e.g., Advanced Certificate)	1.7	2
Professional association(s) program accreditation		
NASP	94.8	110
APA	56.0	65
BACB	2.6	3
Other (e.g., ABAI, CACREP, NDE)	2.6	3
Topic area taught		
Practicum	56.9	66
Academic and/or Cognitive Assessment	45.7	53
Individual Interventions	40.5	47
Classroom-Based Interventions	39.7	46
Consultation	35.3	41
Psychological Assessment (e.g., social-emotional)	31.9	37
Academic Interventions	30.2	35
Research Methods and/or Statistics	27.6	32
Ethics and/or Law	27.6	32
Psychological Foundations (e.g., learning theory)	21.6	25
Diversity	19.8	23
Educational Foundations (e.g., special education)	12.9	15
Other (e.g., program evaluation, internship)	28.4	33
Settings for students in clinical or practicum activities		
School	75.0	87
University-based Clinic	31.9	37
Community-based Clinic	6.9	8
Hospital	6.0	7
Private Practice	2.6	3
Other (e.g., preschool)	2.6	3

(continued)

Type of Data	Percent	<i>n</i>
How decide assessments and interventions to teach?		
Best Practices in School Psychology books	83.6	97
NASP Standards	65.5	76
APA Standards	43.1	50
State-level Requirements	26.7	31
Regional Practices	17.2	20
BACB Standards	6.9	8
Other (e.g., professional judgment)	19.8	23

Participants indicated the assessments and interventions that were decided upon to be taught within their program was mostly based off *Best Practices in School Psychology* (Harrison & Thomas, 2014) and NASP Standards. APA Standards, State-level requirements, Regional practices, BACB Standards, and other (e.g. Empirical Research, Professional Judgment, WhatWorksClearinghouse) were less frequently noted to be considered when deciding which assessments and interventions to teach.

Instructional Strategy Use

The first research question asked, “What percentage of school psychology faculty members are using each of the strategies recommended by Lilienfeld et al. (2012)?” Table 4 presents the percentage of participating faculty members that are using each of the strategies recommended by Lilienfeld et al. (2012). The most commonly used recommendations, “being aware of one’s own bias,” “encouraging dissenting points of view,” and “seeking out disconfirming evidence,” were used by over three-fourths of the respondents. Each recommendation was indicated as being used by over half of the

participants. The least common recommendation used was “being skeptical of clinical wisdom and other appeals to authority.”

Table 4

Percent of Faculty using Recommendations in Training

Lilienfeld et al. (2012) recommendations	Percent of Faculty	<i>n</i>	95% CI
1. School psychologists should always seek out disconfirming evidence.	75.8	88	[0.69, 0.83]
2. Do not become overly attached to your hypotheses.	64.7	75	[0.57, 0.73]
3. Consider rival hypotheses.	61.2	71	[0.53, 0.69]
4. School psychologists should not cherry-pick.	92.2	107	[0.87, 0.97]
5. Put ones’ intuitions to systematic tests.	70.7	82	[0.63, 0.79]
6. Be skeptical of clinical wisdom and do not mistake “eminence-based practice” for “evidence-based practice.”	52.6	61	[0.44, 0.62]
7. Be cognizant of one’s blind spots.	87.1	101	[0.81, 0.93]
8. Dissent should be encouraged.	80.2	93	[0.73, 0.87]
9. School psychologists should quantify data as much as possible.	60.3	70	[0.51, 0.69]
10. Maintain a self-critical attitude.	57.8	67	[0.49, 0.67]

Problematic Assessment Practices

The second research question asked, “What school-based assessment practices do school psychology faculty members identify as the most problematic?” Participants were asked to free-list what they thought were the most problematic and/or non-evidence based assessments that are used by school psychologists in the schools. Items were then placed in the appropriate category for each response. The themes were decided by looking at a sample of the responses and Dr. Farmer and myself agreeing upon appropriate category titles. Problematic assessment themes included: projective testing, cognitive profile analysis, inappropriate use of tests, use of specific test, and other. An example of a free-listed response included “XBA, PSW, cognitive profile analysis in all of its forms (e.g., ipsative, subtest, factor-level).” This response from participant A6 be coded as the cognitive profile analysis category. The response “use of certain cognitive tests with English language learners” from participant A7 would be coded as the inappropriate use of tests category. The response “use of projective assessment tools (sentence completion, TAT, etc.)” from participant A16 would be coded as the projective testing category. Participant A51 listed “Intelligence tests, visual-motor tests, cognitive processing tests,” which would be coded as the use of specific test category. An example of a response that would be coded as the other category is “grade retention; corporal punishment; within-classroom grouping; between classroom grouping (all smart students join the blue bells)” from participant A37.

The most salient or problematic assessment practices (see Figure 2) listed were cognitive profile analysis (e.g., pattern of strengths and weaknesses, cross-battery assessment; $\Sigma/n = 0.628$), projective testing (e.g. Rorschach, kinetic school drawing; Σ/n

= 0.648), and the inappropriate use of assessments (e.g., using outdated tests, using English language tests for English language learners; $\Sigma/n = 0.653$). Saliency scores closer to 0 are considered more salient than higher scores.

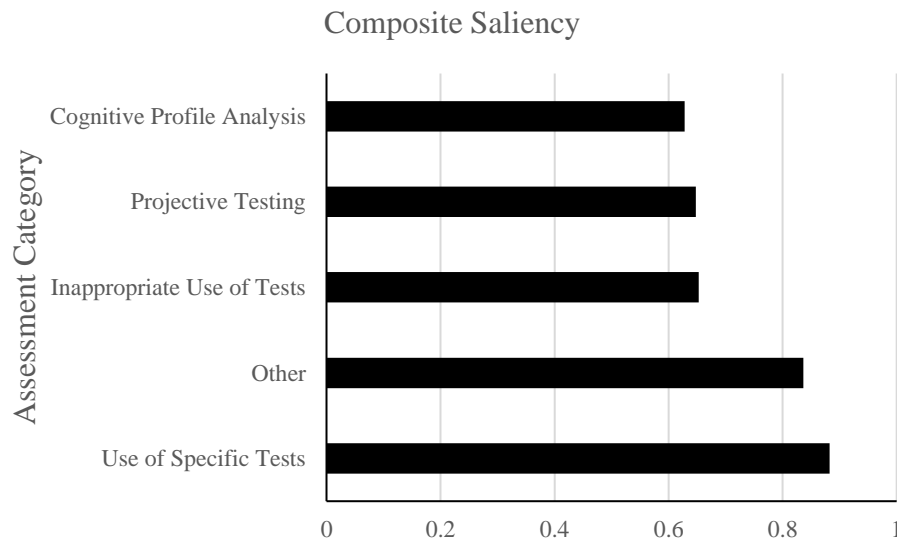


Figure 2. Saliency scores associated with problematic assessment practices.

Problematic Intervention Practices

The third research question asked, “What school-based intervention practices do school psychology faculty members identify as the most problematic?” Participants were asked to free-list what they thought were the most problematic and/or non-evidence based interventions used by school psychologists in the schools. Items were then placed in the appropriate category for each question. The themes were decided by looking at a sample of the responses and Dr. Farmer and myself agreeing upon appropriate category titles. Problematic intervention themes included: specific academic intervention, specific behavior intervention, eclectic counseling, inappropriate use of intervention, learning

styles, inappropriate/no data tracking method; fidelity, and other. For example, participant A65 listed “reading recovery, guided reading, leveled-literacy intervention,” which would be coded as the specific academic intervention category. Participant A46 listed “non-function-based behavioral interventions,” which is considered a specific behavior intervention. Participant A37 listed “chatting it up with their counselors or psychologists, milieu therapy, insight-oriented therapy,” which would be coded as the eclectic counseling category. Participant A110 listed “using evidence-based treatment without sufficient training,” which is considered inappropriate use of intervention. Participant A83 listed “aptitude by treatment interactions, e.g., learning styles,” which would be coded as the learning styles category. Participant A35 listed “Limited or nonexistent data collection and analysis to inform intervention frequency/intensity, using interventions without researching evidence base,” which would be coded as the category of inappropriate/no data tracking method; fidelity. Some examples of responses in the “other” category would be “zero tolerance policy” from participant A19 and “repeating grades” from participant A60.

The most salient or problematic interventions (see Figure 3) listed were the inappropriate use of interventions (e.g., breaking standardization, failure to match intervention to the student’s need; $\Sigma/n = 0.55$) and eclectic counseling (e.g., talk therapy, play therapy; $\Sigma/n = 0.663$). The scores that are closer to “0” on the graph are considered the most salient to the respondents and were more frequently listed first.

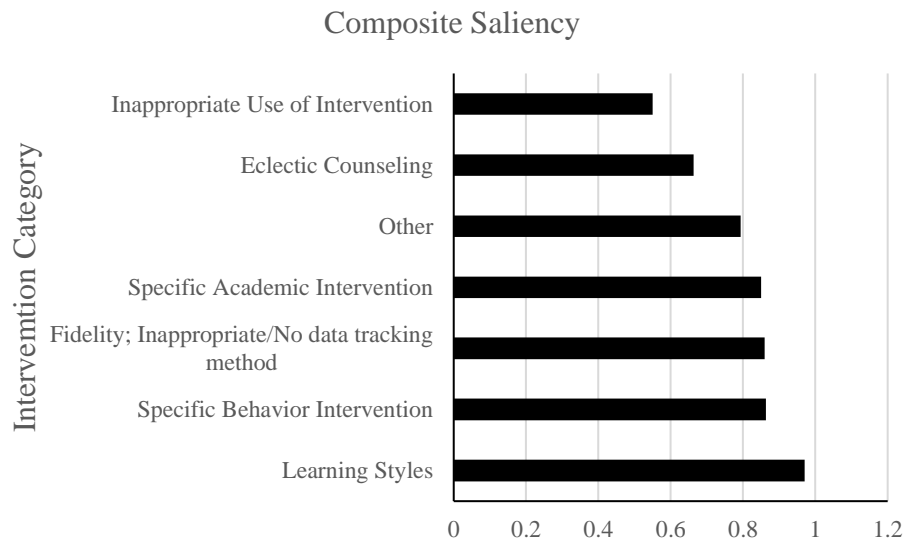


Figure 3. Saliency scores associated with problematic intervention practices.

Discussion

Researchers have advocated a scientific approach for problem solving within the school setting for decades (Bradley-Johnson & Dean, 2000; Reschly, 2000; Reschly & Ysseldyke, 1995), and stakeholders advocated for evidence-based practice to become standard practice for all psychologists (see APA, 2005, 2006; Kratochwill & Stoiber, 2002). Despite these lofty goals, whether school psychologists are prepared to engage in EBP by their graduate programs is open for debate (Hicks et al., 2014; Reddy et al., 2017). VanDerHeyden (2018) pointed out that teaching graduate students specific EBP is beneficial, but teaching students how to identify and implement EBP is even more beneficial. Given the sheer volume of fad, untested, and pseudoscientific practices in special education (Kozloff, 2005) and psychology (Lilienfeld et al., 2012), students need to be prepared to identify when a practice is not evidence based. The first purpose of this study was to better understand the proportion of school psychology faculty who are applying Lilienfeld and colleagues' (2012) recommendations in their instructional practices. Second, Dr. Farmer sought to obtain the perspectives of school psychology faculty with regard to which fad, untested, and pseudoscientific practices are most frequently occurring, and I explored the responses.

The results indicated that the overwhelming majority of respondents report using the strategies offered by Lilienfeld and his colleagues (2012). For instance, at least three-fourths of participants responded that they teach students to seek out disconfirming evidence, not to cherry pick, to be aware of one's own biases, and to dissent with unsupported perspectives. However, participants did not uniformly endorse teaching the science consumer strategies. For instance, despite admonition against eminence-based

practice (e.g., Lilienfeld et al., 2012) dating back at least 70 years (e.g., Buros, 1949, p. 167), only about half of the participants indicated that they teach students to be skeptical of clinical wisdoms in the absence of evidence. The importance of this lesson cannot be understated as it addresses the appeal to authority fallacy that can lead to acceptance of claims from prestigious individuals or organizations in the absence of evidence. It could be argued that the popularity of the cognitive profile analysis, as discussed above, is partially supported by an appeal to authority (Canivez, 2019; McGill et al., 2018) that may be partially addressed if students are taught to be skeptical of such strategies. Similarly, just over half of the participants reported that they taught students to be self-critical, to consider rival hypotheses, to quantify data whenever possible, and not to become attached to one's hypotheses (i.e., philosophic doubt).

A scientist-practitioner who maintains a self-critical attitude acknowledges when one might be mistaken (Lilienfeld et al., 2012). Lilienfeld and colleagues (2012) note that graduate trainers and practitioners who are not questioning preconceptions are setting themselves up for failure and doing a disservice by not taking into account possible evidence that emerges from new articles and studies. The self-critical attitude allows for humility and modification of one's beliefs, which in turn encourages the scientist-practitioner to continue searching for the most up-to-date EBP.

What Lilienfeld and colleagues (2012) mean by considering rival hypotheses is to take into account alternative hypotheses instead of only a favored hypothesis. There can be other factors and hypotheses responsible for research or clinical findings and scientist-practitioners should search for rival explanations to double check their own hypothesis.

Graduate trainers should further emphasize to students when choosing or developing a hypothesis to take into account other possibilities.

Similar to considering rival hypotheses, one should have philosophic doubt and not become attached to one's own hypotheses. Lilienfeld and colleagues (2012) state that one can miss out on disconfirming evidence if they are too focused on their own beliefs or certain hypotheses. Graduate trainers can influence their students by teaching them to learn different types of theories, but not choosing only one to "live and die" by.

Quantifying data reduces uncertainty and is useful by giving results numerically (Lilienfeld et al., 2012). Having the least amount of subjectivity is ideal in a field dealing with problems of efficacy and fidelity (Kratochwill & Shernoff, 2003). Graduate trainers need to continue to teach students the importance of using well-validated scales in order to systematically measure interventions and provide objective results (Lilienfeld et al., 2012).

These values are central to a scientific perspective that promotes objectively identifying strategies and evaluating the efficacy of those strategies in practice, two critical elements of the problem-solving model (NASP, 2010). Moreover, the importance of encouraging a scientific perspective of practice is necessary to forgo the reduction of the school psychologist practitioner to that of a technician, waiting to be told what works, what to do, and what to do next (Reynolds, 2011). When a practitioner relies on sources of authority to drive their practice or forgoes philosophic doubt, spurious practice may result.

VanDerHeyden (2018) encourages us to tackle big problems, to select evidence-based practices, and in general, to do what works. However, she argues that "ineffective

tactics persist” (p. 45). The second purpose of this project was to identify ubiquitous ineffective practices used by school psychology practitioners, as perceived by school psychology faculty. Given recent empirical emphasis on diagnostic utility of PSW (e.g., McGill et al., 2018), perhaps it is not surprising that so many faculty identified cognitive profile analysis (CPA) as one of the most problematic assessment practices. However, this contradicts with recent results suggesting that cognitive profile analytic approaches to intelligence test interpretation remain prominent, with nearly 70% of cognitive assessment instructors teaching some form of PSW (Lockwood & Farmer, in press).

In addition to CPA, faculty identified continued use of projective testing as a problematic assessment behavior, consistent with research on the topic (e.g., Erickson, Lilienfeld, & Vitacco, 2007; Wood, Nezworski, Lilienfeld, & Garb, 2003). While identified as a salient problematic assessment practice by faculty, a recent survey by Benson and colleagues (2018) indicate that use of projective tests by practitioners has significantly declined over the past two decades. This is consistent with a decline in focus on projective assessment during training in general (Handler & Smith, 2013) over the past several decades. Finally, faculty generally identified inappropriate test use, such as using tests with out-of-date norms or primarily English-language instruments with English Language Learners, as an ongoing and problematic behavior. These issues, as well as concerns over the use of CPA and projective assessments, may be rooted in the lack of coursework on psychological measurement in graduate programs (Canivez, 2019). Canivez argues that “The lack of adequate training in psychological measurement principles and statistical techniques to assess reliability, validity, and utility...” (p. 5) may make school psychology students unable to identify when the information provided

for a particular test or assessment process, by test publishers in his example, is inadequate or exaggerated. While Canivez's (2019) argument is applied directly to psychometric testing, this same reasoning can be applied to psychological treatments as well.

While psychometric testing is a key part of a school psychologist's role, psychological treatment and the importance of mental health interventions is just as important. Applying the wrong type of intervention, or treatment that is eminence-based, could be detrimental to all parties involved (Harvey & Gumport, 2015). The most salient problematic interventions listed by school psychology faculty members included eclectic counseling and inappropriate use of interventions. Again, this implies the awareness that faculty members have in regards to implementing interventions and assessments in the appropriate way. Kratochwill and Shernoff (2003) suggested practitioners use manuals and procedural guidelines to help in the facilitation of interventions in practice. In theory, this would increase the fidelity and proper implementation of interventions, as well as operationalize EBP.

In regards to eclectic therapy, Norcross and Beutler (2000) identified principles for development of psychotherapists. In their article, they noted that past graduate training programs mostly assumed rather than verified the competence of students within their psychotherapy courses. The high percentage of participants indicating that eclectic therapy usage is problematic could stem from training programs not having proper evaluation techniques of psychotherapy or intervention courses. Teaching graduate students the proper way to interpret and apply EBP interventions should continue to be taught in graduate programs and applied in practice.

Implications for Research and Practice

The authors of the NASP *Standards for Graduate Preparation of School Psychologists* (2010) used the phrase “evidence-based” more than 20 times in their document while the authors of the NASP *Practice Model* (2010) used the phrase “evidence-based” at least once within each of the 10 domains, implying that NASP places high value on evidence based practice in school psychology. The APA (2005, 2006) has clearly delineated that evidence-based practice in psychology should become the standards.

Other guiding documents, such as *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014), further affirm a professional standard in psychology related to evidence-based practice. Lilienfeld and colleagues (2012) have provided school psychology faculty recommendations to help with training practitioners to become good consumers of research. It is promising that so many of these strategies are used by the participants of this study; however, not all strategies were as heavily endorsed. Given the importance of evidence-based practice in school psychology, these results suggest that increasing awareness of Lilienfeld and colleagues (2012) recommendations and facilitating school psychology specific lesson plans and activities based on those recommendations may be warranted. For instance, the fewest number of participants reported directly teaching students to reject appeals to authority. The website, <http://www.appealtoauthority.info/more>, provides a lesson plan wherein an instructor leads a class in a discussion expressing an opinion, and dictating that because they made that statement as their professor, it must be true. The instructor then facilitates students to reject that conclusion and guides expansion of those skills to other domains, including

those in science. This could readily be applied in school psychology such as those identified as problematic practices.

The take away is that Lilienfeld and colleagues (2012) have provided specific lessons that may facilitate scientific thinking in graduate students, and instruction and activities on these lessons require little response effort but may yield substantial return. That said, this study did not evaluate the efficacy or outcomes of such instructional strategies. The second set of questions on which data were collected adequately provides school psychology faculty members specific examples on which lesson plans could be created. School psychology instructors should strive to integrate Lilienfeld and colleagues' (2012) recommendation into their early and foundational courses. Providing students with the foundations and skills necessary to critically evaluate the practices they are taught in graduate school, workshops, and in-services, and passed along to them through colleagues will help guide future practitioners with the decision-making process in their careers.

In addition to potentially providing content for lesson plans during graduate school, the participants' selection of problematic assessment and intervention practices suggests that these professional practices are either (a) frequent or (b) especially problematic. Results of the survey related to assessment could implicate changes in the field in regards to which types of assessments should be taught at the graduate training level. This also implies that the field of school psychology still has room for growth and more research into what can be done to best train students.

That faculty find the continued use of projective testing to be problematic is not surprising, though that it continues to occur at high-enough rates to be salient is

surprising (Benson et al., 2018). One potential reason for this finding is that projective testing is often used as the exemplar of questionable testing practices (e.g., Wood et al., 2003). As such, instruments like the House Tree Person may be used less frequently (Benson et al., 2018), but draw more attention. That said, faculty in our study largely considered their use to be problematic. Based on the responses from faculty, the possibility of a more decreased usage and teaching of projective testing by faculty may be likely. Unlike profile analysis, it is unclear the percentage of programs that teach projective testing.

The two most problematic intervention practices, inappropriate use of interventions and eclectic therapy, could mean that changes need to occur in order to help training programs increase the importance of EBP. The results indicate that graduate trainers are aware of the research, or lack thereof, behind eclectic therapy techniques. Using appropriate therapy techniques and interventions properly may be something that school psychology faculty want to focus on more. Assessment is a big role for school psychologists, but being able to identify appropriate interventions is something school psychology programs may continue to work on. Teaching students how to identify what is, and is not, evidence-based may be beneficial in determining specific interventions that could help in certain situations. Having practitioners being able to identify the difference between EBP and non-EBP may be a goal for school psychology faculty members to teach.

Limitations and Future Directions

This study used a sample of convenience with only one sampling method (email) used. Five percent of emails bounced back from the initial 912 emails sent. Several of the

emails (16) responded with the researcher asking to be removed from the list or explaining that he/she was not a school psychologist. Having only used the recruitment method of email along with a follow-up email is a limitation. Future researchers should consider methods that would permit more selective and proactive recruitment.

The small sample size in general is a limitation. The sample size of participants who completed the free-lists may not have been a representative sample as a couple of participants indicated that the questions were “biased.” Because some people interpreted items in this way, sampling on these items may be biased and unrepresentative. A related limitation was the number of respondents answering the free-list questions. The sample size varied from item to item due to missing responses or response being out of place. Out of the 127 participants who completed the survey, there were only a total of 63 participants who listed problematic assessments and 45 who listed problematic interventions.

There are general limitations of collecting survey data within this study. The survey data collected self-report responses, but there was no verification of actual practices being done. The survey was completed by one group (professors) reporting on the behavior and practices of another group (school psychology practitioners). There was no test to determine if the participants understood the topics or questions within the survey.

The data are potentially easily manipulated by positive attribution bias due to the nature of the questions. Most faculty would argue that they are doing what is best for their students and preparing them well, whether or not the faculty are aware what they are teaching is EBP.

This survey was not distributed to practicing school psychologists and targeted those in an academic setting. It would be helpful to know what percentage of practicing school psychologists follow Lilienfeld and colleagues' (2012) recommendations and their opinions on which assessments and interventions are problematic.

While Lilienfeld and colleagues (2012) provided recommendations on being a critical consumer of research, there has not been any indication of the effectiveness of using the recommendations.

Teaching EBP in assessments and treatment interventions should continue to be a priority for school psychology program faculty. Teaching graduate students skills to recognize a practices' evidence base may help grow this field of study and better prepare practitioners. Giving practitioners a repertoire in what is and is not EBP may be beneficial for students and schools.

Conclusions

School psychology faculty members play a vital role in teaching and training graduate students the skills to determine EBP and to detect the absence of evidence for professional practices. Using Lilienfeld and colleagues' (2012) recommendations on how to be a critical consumer of research, graduate trainers are advancing the field and showing awareness of the importance of EBP and ways that the scientist-practitioner gap can be closed. The majority of participants in this study indicated that Lilienfeld and colleagues' (2012) recommendations are used within their teachings, which may be beneficial for school psychologists in the field when determining which assessments and interventions are appropriate. However, there is room for growth as not all strategies were uniformly used. The problematic assessments and interventions listed by graduate

trainers give insight to the awareness of non-EBP and possible changes that are to come to the field of school psychology; more so, recognition of the most salient problematic practices provides content areas around which to teach science consumerism. Giving graduate students the proper training on not only what is EBP, but how to recognize EBP is a skill school psychology faculty members should strive to teach their students.

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